



## A taxonomic and pollen morphological revision of the genus *Gongrodiscus* (Sapindaceae)

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**Summary:** The endemic New Caledonian genus *Gongrodiscus* Radlk. (*Sapindaceae*) is revised. One new species is described: *G. bilocularis*. A key to the three species and descriptions are given. In addition, the morphology of the pollen is described.

**Résumé :** Une révision du genre *Gongrodiscus* Radlk. (*Sapindaceae*), endémique de la Nouvelle-Calédonie, est présentée. Une espèce nouvelle, *G. bilocularis*, est décrite. Une clef et les descriptions des trois espèces sont données. De plus, la morphologie du pollen est décrite.

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The genus *Gongrodiscus* was first described by RADLKOFER in 1879. He distinguished two species: *G. sufferrugineus* and *G. parvifolius*. The generic name, derived from the Greek words “gongros” (gnarled, knotty) and “diskos” (disc), refers to the distinctly 5-lobed discs of all species, one of the characters mentioned in the protologue. Other characters noted by him are the long claw of the petals and the papillose abaxial epidermis of the leaflets. The remainder of the protologue deals with fruit and embryo characters, but unfortunately RADLKOFER had seen only the fruit of *G. sufferrugineus*. This situation was not amended by him in any of his following treatments (RADLKOFER 1890, 1895, 1933). GUILLAUMIN (1932, 1948) apparently did not have better material available either, because he only copies RADLKOFER’s keys.

Now that ample material of the different species is available, it has become clear that the fruit and embryo characters noted by RADLKOFER for the genus (unilocular, three-valved, stipitate fruit, densely woolly inside; embryo with twice folded cotyledons) are in fact peculiar to *G. sufferrugineus*. The other two species have completely septate, (sub)sessile 2- or 3-locular fruits which are almost glabrous inside; the embryos, although their cotyledons also have elongated apices, are curled in a different way from that in *G. sufferrugineus* (Fig. 1B, H). An amended description of the genus is given below.

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The affinities of *Gongrodiscus* to other genera of Sapindaceae-Cupanieae are not clear. RADLKOFER (1890) placed it in the vicinity of the genera *Sarcotoechia*, *Elattostachys*, *Arytera*, and *Mischocarpus*, while MULLER & LEENHOUTS (1976) placed it close to *Mischocarpus*, a view contested by VAN DER HAM (1977), who studied the latter genus in detail. Instead, he suggested *Cupaniopsis* as a close relative, but this was rejected by ADEMA (1991).

Several characters of *Gongrodiscus* occur in various other genera, e.g. abaxially papillose leaflets occur in *Storthocalyx*, *Guioa* (VAN WELZEN 1989), *Gongrospermum* (VAN WELZEN 1991), *Cnesmocarpon* (ADEMA & VAN DER HAM 1993), and some *Cupaniopsis* species (ADEMA 1991); lobed discs are found in *Toechima* (LEENHOUTS 1994), subsect. *Pacifica* of *Arytera* (mostly New Caledonian) and in *A. microphylla* (TURNER 1995); embryos whose cotyledons have elongated apices can be found in *Elattostachys* (ADEMA 1993), while long radicles with hairy margins are found again in subsect. *Pacifica* of *Arytera* and in *A. novaebritanniae* from New Britain and the Solomon Islands (TURNER 1995). The combination of these character states is unique to *Gongrodiscus*, however.

The pollen of *Gongrodiscus* (Fig. 2) belongs to type B in the survey of pollen types in the Sapindaceae by MULLER & LEENHOUTS (1976). Type B is characterised by a (para)syncolporate aperture system, and occurs in four tribes: Cupanieae, Melicocceae (3 of 5 genera), Nephelieae (1 of 12 genera) and Schleichereae (1 of 13 genera). In the pantropical tribe Cupanieae it is found in 33 of the 48 genera (VAN DER HAM 1990), including *Cnesmocarpon* (ADEMA & VAN DER HAM 1993), *Mischarytera* (VAN BERGEN et al. 1995 [as *Arytera lautereriana* group]; TURNER 1995) and *Gongrospermum* (unpubl. data). Type B is present in nearly all (25/27) genera from Asia, Australia and the Pacific, while in Africa (3/9) and America (4/7) it is less common. Pollen like that of *Gongrodiscus* (oblate, triangular, parasyncolporate, with large, distinct apocolpial fields and a densely rugulate ornamentation with short straight muri) is known from several other genera in the Cupanieae. The greatest resemblance is with pollen of *Guioa asquamosa* (Timor), *G. crenata*, *G. fusca*, *G. gracilis* and *G. microsepala* (all from New Caledonia), all belonging to group I of VAN DER HAM & VAN HEUVEN (1989), *Matayba apetala*, *M. guianensis*, *M. juglandifolia* and *M. macrocarpa* from Central and South America (unpubl. data), several species of *Molinaea* and *Tina* from Madagascar (MULLER & SCHULLER 1989), and *Sarcopteryx caudata* from New Guinea (unpubl. data). Somewhat less close is the pollen of *Mischarytera bullata*, *M. lautereriana* and *M. macrobotrys* from Australia and New Guinea (VAN BERGEN et al. 1995). How far these similarities indicate true phylogenetic relationships is not clear yet.

## GONGRODISCUS Radlk.

Sitzungsber. Math.-Phys. Kl. Königl. Bayer. Akad. Wiss. Münch. 9: 503, 607 (1879); loc. cit. 20: 293 (1890); in Engler & Prantl, Nat. Pflanzenfam. III, 5: 350 (1895); Guillaumin, Bull. Soc. Bot. France 79: 341 (1932); Radlk. in Engler, Pflanzenr. 98f: 1310 (1933); Guillaumin, Fl. Anal. Synopt. Nouv.-Caléd.: 201 (1948). — Lectotype (present authors): *Gongrodiscus sufferrugineus* Radlk.

### MACROMORPHOLOGY

Trees or shrubs. Glandular scales absent. Leaf rachis hemiterete, not winged; petiole pulvinate. Leaflets not to slightly falcate, very coriaceous; margin entire, usually slightly revolute; upper sur-